

The completed and signed proposal should be submitted by the Dean's Office to: curriculumplanning@asu.edu.

Before academic units can advertise undergraduate concentrations or include them in their offerings as described in the university catalogs, they must be recommended for approval by the Senate Curriculum and Academic Programs Committee and approved by the Executive Vice President and Provost of the University.

Definition and minimum requirements:

A concentration is a formalized selection of courses within a major.

- A concentration requires a minimum of 15 semester hours of which at least 9 semester hours must be upper division. Specialized concentrations (e.g., BIS Concentrations) may have additional or different requirements.
- A concentration is offered by a single unit and is intended exclusively for students pursuing a particular major. If a concentration consists of courses from more than one college the approval of each college Dean is required.

College/School/Institute: College of Technology and Innovation

Department/Division/School: Engineering

Proposing Faculty Group (if applicable):

If this is an official joint degree program? No

If "Yes" List all the additional college(s)/school(s)/institute(s) that will be involved in offering the degree program and providing the necessary resources. Note: All units offering this program must have collaborated in the proposal development and completed the appropriate unit and college/school approvals. N/A

Existing degree type and name of degree program under which this concentration will be established: BSE Engineering

Proposed Concentration Name: Robotics

Requested effective catalog year? Fall 2013

For deadline dates see: [Curriculum Workflow Calendars](#).

Delivery method: On campus / polytechnic campus

Once students elect a campus or On-line option, students will not be able to move back and forth between the on-campus and the ASU Online options. Approval from the Office of the Provost and [Philip Regier](#) (Executive Vice Provost and Dean) is required to offer programs through ASU Online.

Campus/Locations:

Indicate all locations where this program will be offered.

Downtown Phoenix
 Polytechnic
 Tempe
 West
 Other:

Proposal Contact

Name: Ann McKenna

Title: Chair and Associate Professor

Phone number: 480-727-5121

Email: Ann.McKenna@asu.edu

DEAN APPROVAL(S)

This proposal has been approved by all necessary unit and College/School levels of review. I recommend implementation of the proposed program

College/School/Division Dean name: Please see Dean's approval in attached support file.

Signature _____ **Date:** ____ / ____ / 20

College/School/Division Dean name: (if more than one college involved): _____

Signature _____ **Date:** ____ / ____ / 20

Note: An electronic signature, an email from the dean or dean's designee, or a PDF of the signed signature page is acceptable.

1. Overview

A. Description

Provide a brief description of the new concentration (including the specific focus of the new concentration, relationship to other concentrations in this degree program, etc).

The engineering department at the Polytechnic campus has a multidisciplinary engineering program with a concentration in Robotics. The multidisciplinary engineering program allows students to learn in a flexible problem-based curriculum with hands-on projects and the development of professional skills integrated into the program via project courses every semester. As a part of the flexible program, students can elect to take junior and senior mechanical engineering topic courses to complete a concentration in robotics. These courses have a focus on robotics and the electrical and mechanical engineering systems that make up robotic devices. A graduate with the robotics concentration will be able to provide leadership in large automation engineering projects, which are intrinsically multi-disciplinary in nature, using cross disciplinary knowledge in mechanical and electrical engineering to design and control robotic systems.

B. Demand

Explain the unit's need for the new concentration (e.g., market demand, research base, direction of the discipline, and interdisciplinary considerations). How will the new concentration complement the existing degree program?

A Robotics focus area currently exists as part of the BSE Engineering program in the College of Technology and Innovation at the Polytechnic campus. The number of students enrolled in EGR 394 Robotics 1, which we use as a measure of interest in the focus area, was 9 in 2010, 26 in 2011, and 22 in 2012. The Robotics focus area is about the same size as the Mechanical Systems focus area, and both are larger than the other program focus areas. The Robotics focus area provides a very useful recruiting tool, and in particular provides a strong attraction for freshmen students who were part of the FIRST (For Inspiration in Science and Technology) Robotics programs in high school. There is a developing market for undergraduate programs in robotics; Worcester Polytechnic Institute has recently started a robotics undergraduate engineering program. Students are being hired in manufacturing, automation, robotics fields and can develop products which combine mechanical parts, electronic systems and sensors.

2. Support and Impact

A. Faculty governance

Provide a supporting letter from the chair of the academic unit verifying that the proposed concentration has received faculty approval through appropriate governance procedures in the unit and that the unit has the resources to support the concentration as presented in the proposal, without impacting core course resources.

B. Other related programs

Identify other related ASU programs and outline how the new concentration will complement these existing ASU programs. (If applicable, statements of support from potentially-affected academic unit administrators need to be included with this proposal submission.)

The Ira A Fulton School of Engineering was consulted for comment and has no objection to the proposed concentration (email attached).

C. Letter(s) of support

Provide a supporting letter from each college/school dean from which individual courses, or the entire concentration, are taken.

3. Academic Curriculum and Requirements

A. Knowledge, competencies, and skills

List the knowledge, competencies, and skills (learning outcomes) students should have when they complete this proposed concentration. Examples of program learning outcomes can be found at (<http://www.asu.edu/oue/assessment.html>).

The Robotics Concentration allows students to choose either a mechanical focus or an electrical focus.

Students will:

- analyze the behavior of robotic mechanisms focusing on kinematics and dynamics of planar systems
- analyze robotic systems using coordinate transformations – direct kinematics, inverse kinematics, Jacobians

- build and control a planar robot
- model 2nd order systems that include a motor/gearbox and robot links
- apply modeling tools such as Matlab/Simulin
- analyze the dynamics of spatial mechanisms using Lagrange Equations
- control the dynamics of spatial mechanisms such as an inverted pendulum
- perform a force analysis on a robotic mechanism
- develop real-time embedded computer code to control robotic mechanisms using packages such as Matlab, Real Time Workshop
- demonstrate design, communication and critical thinking skills in an applied project setting

Students following the mechanical focus within the Robotics concentration will:

- evaluate strength and physical performance of natural and artificial solid structures.
- apply fundamentals of mechanics in analysis and synthesis of machine components and systems, with emphasis on stress and failure.

Students following the electrical focus within the Robotics concentration will:

- analyze and model propagation of electrical signals and energy across distributed systems.
- perform state-space and transform-domain modeling and analysis of electrical and electromechanical systems.

B. Admissions criteria

List the admissions criteria for the proposed concentration. If they are identical to the admission criteria for the existing major and degree program under which this concentration will be established, please note that here.

Admission criteria mirrors that of the existing major and degree.

C. Curricular structure

Provide the curricular structure for this concentration. Be specific in listing required courses and specify the total minimum number of hours required for the concentration.

Required Core Courses for the Degree/Major

Engineering Core (note: Additional supporting courses required within general studies are noted on major map)

Prefix	Number	Title	Is this a new Course?	Credit Hours
EGR	101	Introduction to Engineering Design I	N	3
EGR	102	Introduction to Engineering Design II	N	3
EGR	104	Critical Inquiry in Engineering	N	3
EGR	201/202	Fall/Spring Multidisciplinary Project	N	3/3
EGR	216/217	Fundamental of Engineering Systems I / II	Y	3/3
EGR	218	Materials and Manufacturing Processes	Y	3
EGR	219	Computational Modeling of Engineering Systems	Y	3
EGR	280	Engineering Statistics	N	3
EGR	301/302	Fall/Spring Concentration Project	N	3/3
<i>Section sub-total:</i>				36

Required Concentration Courses

Prefix	Number	Title	Is this a new Course?	Credit Hours
EGR	356	Robotic Systems I	Y	3
EGR	456	Robotic Systems II	Y	3
EGR	433	Transforms and Systems Modeling	N	3
EGR	343	Mechanics of Solid Materials <i>(for mechanical emphasis)</i>	N	3
OR				
EGR	330	Design of Electrical Systems <i>(for the electrical emphasis)</i>	Y	3
EGR	346	Engineering Design <i>(for mechanical emphasis)</i>	N	3
OR				
EGR	334	Analog Digital Interface <i>(for the electrical emphasis)</i>	Y	3
PHY	321	Vector Mechanics and Vibrations	N	3
<i>Section sub-total:</i>				18

Elective Concentration Courses

Prefix	Number	Title	Is this a new Course?	Credit Hours
<i>Section sub-total:</i>				0

Other Concentration Requirements

				Credit Hours
E.g. – Capstone experience, internship, clinical requirements, field studies, foreign language skills as applicable				
EGR	401/402	Engineering Capstone Project I/II	N	3/3
Section sub-total:				6
Total minimum credit hours required for concentration				60*
				<small>*conc +degree core</small>

Academic Curriculum and Requirements (Continued)

D. Minimum residency requirement

How many hours of the concentration must be ASU credit? 6 credits

E. Provide a brief course description for each new course.

Degree Core:

EGR 216: Fundamentals of Engineering Systems I (3)

An introduction to modeling of engineering systems using mathematical and scientific principles. Modeling techniques include network models for electrical, fluid and heat systems; application of basic thermodynamic considerations to understand limitations in energy conversion; and application of basic mechanics of particles to model simple mechanical systems. In addition, the course will introduce the basic structure a modern electronic measurement system and relate this structure to measurement accuracy, precision and resolution.

Enrollment requirements: Prerequisite: CHM 113 or CHM 114, MAT 265

EGR 217: Fundamentals of Engineering Systems II (3)

Modeling of engineering systems at an intermediate level using mathematical and scientific principles. Modeling techniques include basic static and dynamic analysis of rigid bodies; electrical circuit analysis; simple frequency domain models of linear systems; and applications of feedback in linear system models.

Enrollment requirements: Prerequisites: PHY 121, EGR 216

EGR 218 Materials and Manufacturing Processes (3)

Course description: Application of material properties and manufacturing processes to the design and fabrication of engineered artifacts.

Enrollment requirements: Prerequisites: CHM 113 or CHM 114

EGR 219 Computational Modeling of Engineering Systems (3)

Course description: An introduction to computing that develops software to find solutions to engineering problems. Students will write and document code to solve problems in data acquisition, modeling of physical systems, and optimization.

Concentration:

EGR 356: Robotics I (3)

Analysis and design of robotic systems focusing on kinematics, dynamics, coordinate transformations, and modeling.

Prerequisites EGR 217 and EGR 219

EGR 456: Robotics II (3)

Design of robotic systems focusing on dynamics, modeling, and controlling a robot. Prerequisites: EGR 356

EGR 330 Design of Electrical Systems (3) (will also be required for the Electrical Systems concentration)

Overview of electrical system architectures and components used in design of smart electrical and electromechanical systems. Prerequisites EGR 217 and EGR 219

EGR 334 Analog-Digital Interface (3) (will also be required for the Electrical Systems concentration)

Overview of electrical system architectures and components used in design of smart electrical and electromechanical systems. Prerequisites: EGR 217 and EGR 219; Corequisite EGR 301

Note: All new required courses should be submitted in Curriculum Chagemaker and ready for Provost's Office approval before this concentration is put on [Curriculum and Academic Programs Committee \(CAPC\)](#) agenda.

4. Administration and Resources

A. How will the proposed concentration be administered (including admissions, student advisement, retention, etc.)?

The concentration will be administered through the current structure and process for in place for the existing major and degree.

B. What are enrollment projections for the next three years?

	1st Year	2nd Year (Yr. 1 continuing + new entering)	3rd Year (Yr. 1 & 2 continuing + new entering)
Number of Students (Headcount)	30	37	45

*Projections based on enrollment in existing focus areas and expected growth as explained in demand statement.

C. Resources

What are the resource implications for the proposed concentration, including any projected budget needs? Will new books, library holdings, equipment, laboratory space and/or personnel be required now or in the future? If multiple units/programs will collaborate in offering this concentration please discuss the resource contribution of each participating program. Letters of support must be included from all academic units that will commit resources to this concentration.

No additional resources are required.

D. Primary Faculty

List the primary faculty participants regarding this proposed concentration. For interdisciplinary concentrations, please include the relevant names of faculty members from across the University.

Name	Title	Area(s) of Specialization as they relate to proposed concentration
Mr. Jerry Gintz	Senior Lecturer	electrical engineering
Dr. Robert Grondin	Associate Professor	electrical engineering, engineering education
Dr. Shawn Jordan	Assistant Professor	electrical engineering, engineering education
Dr. Darryl Morrell	Associate Professor	electrical engineering
Dr. Changho Nam	Associate Professor	mechanical engineering, aerospace engineering
Dr. Sangram Redkar,	Assistant Professor	mechanical engineering, dynamics, vibrations, controls
Dr. John Robertson	Full Professor	mechanical engineering, robotics, controls
Dr. Thomas Sugar	Associate Professor	mechanical engineering, robotics, controls, design

Dr. Angela Sodemann	Assistant Professor	robotics, controls

5. Additional Materials

A. Major Map

Attach a copy of the “proposed” major map for this degree program and each concentration(s) to be offered. Instructions on how to create a “proposed major map” in [BAMM](#) can be found in the [Build a Major Map Training Guide](#).

B. Appendix

Complete and attach the Appendix document.

C. Attach other information that will be useful to the review committees and the Office of the Provost.

APPENDIX
OPERATIONAL INFORMATION FOR UNDERGRADUATE CONCENTRATIONS

(This information is used to populate the [Degree Search/catalog](#) website.)

Please consider the student audience in creating your text.)

1. Proposed Concentration Name: Engineering (Robotics), BSE

2. Program Description (150 words maximum)

The engineering department at the College of Technology and Innovation offers a multidisciplinary engineering program with a concentration in robotics. The multidisciplinary engineering program allows students to learn in a flexible problem-based curriculum with hands-on projects and the development of professional skills integrated into the program via project courses every semester. As a part of the flexible program, students can elect to take junior and senior mechanical engineering topic courses to complete a concentration in robotics. These courses have a focus on robotics and the electrical and mechanical engineering systems that make up robotic devices. A graduate with the robotics concentration will be able to provide leadership in large automation engineering projects, which are intrinsically multi-disciplinary in nature, using cross disciplinary knowledge in mechanical and electrical engineering to design and control robotic systems.

3. Contact and Support Information

Building Name, code and room number: (<i>Search ASU map</i>)	TECH 101
Program office telephone number: (<i>i.e. 480/965-2100</i>)	480/727-1874
Program Email Address:	egr@asu.edu
Program Website Address:	https://technology.asu.edu/egr

4. Delivery/Campus Information Delivery: On campus, Polytechnic campus

Note: Once students elect a campus or On-line option, students will not be able to move back and forth between the on-campus and the ASU Online options. Approval from the Office of the Provost and Philip Regier (Executive Vice Provost and Dean) is required to offer programs through ASU Online.

5. Campus/Locations: indicate all locations where this program will be offered.

Downtown Phoenix Polytechnic Tempe West Other:

6. Additional Program Description Information

A. Additional program fee required for this program? YES (the BSE in Engineering has a program fee)
B. Does this program have a second language requirement? No

7. Career Opportunities & Concentrations

Provide a brief description of career opportunities available for this degree program. If program will have concentrations, provide a brief description for each concentration. (150 words maximum)

Robotics are playing an increasingly important role in many different industries, including manufacturing, automotive, defense systems, biomedical devices, and aerospace. Graduates from this program have a broad base of technical knowledge in the design and implementation of electro-mechanical systems. In addition, they have the operational and communication skills that make them invaluable members of multi-disciplinary engineering teams, well suited for employment across the whole spectrum of applications.

8. Additional Admission Requirements

If applicable list any admission requirements (freshman and/or transfer) that are higher than and/or in addition to the university minimum undergraduate admission requirements.)

None

9. Keywords

List all keywords used to search for this program. Keywords should be specific to the proposed program.
Engineering, design, robotics, automation, mechatronics, electromechanical

10. Advising Committee Code

List the existing advising committee code to be associated with this degree. UGTIEN

Note: If a new advising committee needs to be created, please complete the following form:

[Proposal to create an undergraduate advising committee](#)

11. First Required Math Course

List the first math course required in the major map. MAT 265 is the first required MA course.

The program also requires: MAT 266, MAT 267, MAT 275, MAT 343 for a total of 15 mathematics credits

12. Western Undergraduate Exchange (WUE) Eligible:

Has a request been submitted to the Provost by the Dean to consider this degree program as eligible for [WUE](#)? Yes, the BSE in Engineering program is WUE Eligible.

Note: No action will be taken during the implementation process with regards to WUE until approval is received from the Provost.

13. Area(s) of Interest

A. Select **one (1)** primary Area of Interest from the list below that applies to this program.

- | | |
|--|---|
| <input type="checkbox"/> <u>Architecture, Construction & Design</u> | <input checked="" type="checkbox"/> <u>Engineering & Technology</u> |
| <input type="checkbox"/> <u>Artistic Expression & Performance</u> | <input type="checkbox"/> <u>Environmental Issues & Physical Science</u> |
| <input type="checkbox"/> <u>Biological Sciences, Health & Wellness</u> | <input type="checkbox"/> <u>Interdisciplinary Studies</u> |
| <input type="checkbox"/> <u>Business, Management & Economics</u> | <input type="checkbox"/> <u>Languages & Cultures</u> |
| <input type="checkbox"/> <u>Communication & Media</u> | <input type="checkbox"/> <u>Law & Justice</u> |
| <input type="checkbox"/> <u>Computing & Mathematics</u> | <input type="checkbox"/> <u>Social Science, Policies & Issues</u> |
| <input type="checkbox"/> <u>Education & Teaching</u> | |

B. Select **any** additional Areas of Interest that apply to this program from the list below.

- | | |
|--|---|
| <input type="checkbox"/> <u>Architecture, Construction & Design</u> | <input type="checkbox"/> <u>Engineering & Technology</u> |
| <input type="checkbox"/> <u>Artistic Expression & Performance</u> | <input type="checkbox"/> <u>Environmental Issues & Physical Science</u> |
| <input type="checkbox"/> <u>Biological Sciences, Health & Wellness</u> | <input type="checkbox"/> <u>Interdisciplinary Studies</u> |
| <input type="checkbox"/> <u>Business, Management & Economics</u> | <input type="checkbox"/> <u>Languages & Cultures</u> |
| <input type="checkbox"/> <u>Communication & Media</u> | <input type="checkbox"/> <u>Law & Justice</u> |
| <input checked="" type="checkbox"/> <u>Computing & Mathematics</u> | <input type="checkbox"/> <u>Social Science, Policies & Issues</u> |
| <input type="checkbox"/> <u>Education & Teaching</u> | |

The following fields are to be completed by the Office of the Executive Vice President and Provost of the University.

CIP Code: _____

Plan Code: _____



**2013 - 2014 Major Map
Engineering-Robotics, BSE (Proposed)**

Term 1	0 - 14 Credit Hours	Critical course signified by	Hours	Minimum Grade	Notes
		CHM 113: General Chemistry I (SQ)	4		<ul style="list-style-type: none"> An SAT, ACT, Accuplacer, or TOEFL score determines placement into first-year composition courses ASU Math Placement Exam score determines placement in Mathematics course ASU 101 or College specific equivalent First Year Seminar required of all freshman students
		CTI 101: Success in Technology & Innovation	1		
		EGR 101: Introduction to Engineering Design I	3		
		ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: English for Foreign Students	3	C	
		MAT 265: Calculus for Engineers I (MA)	3	C	
		Term hours subtotal:	14		
Term 2	15 - 29 Credit Hours	Critical course signified by	Hours	Minimum Grade	Notes
		EGR 102: Introduction to Engineering Design II	3		
		EGR 104: Critical Inquiry in Engineering (L)	3		
		ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: English for Foreign Students	3	C	
		MAT 266: Calculus for Engineers II (MA)	3	C	
		PHY 121: University Physics I: Mechanics (SQ)	3		
		Term hours subtotal:	15		
Term 3	30 - 44 Credit Hours	Critical course signified by	Hours	Minimum Grade	Notes
		EGR 201: Fall Multidisciplinary Project	3		
		EGR 216: Fundamentals of Engineering I	3		
		EGR 218: Materials and Manufacturing Processes	3		
		EGR 280: Engineering Statistics (CS)	3		
		MAT 267: Calculus for Engineers III (MA)	3	C	
		Term hours subtotal:	15		
Term 4	45 - 59 Credit Hours	Critical course signified by	Hours	Minimum Grade	Notes
		EGR 202: Spring Multidisciplinary Project	3		
		EGR 217: Fundamentals of Engineering Systems II	3		
		EGR 219: Computational Modeling of Engineering Systems	3		
		Humanities, Fine Arts and Design (HU) AND Historical Awareness (H)	3		
		MAT 275: Modern Differential Equations (MA) OR MAT 274: Elementary Differential Equations (MA)	3		
		Term hours subtotal:	15		
Term 5	60 - 75 Credit Hours		Hours	Minimum Grade	Notes
		BIO 181: General Biology I (SQ) OR CHM 116: General Chemistry II (SQ) OR GLG 101: Introduction to Geology I (Physical) (SQ & G) AND GLG 103: Introduction to Geology I-Laboratory (SQ) OR PHY 122: University Physics Laboratory I (SQ) OR PHY 131: University Physics II: Electricity and Magnetism (SQ) AND PHY 132: University Physics Laboratory II (SQ) OR BIO 182: General Biology II (SQ)	4		<ul style="list-style-type: none"> A secondary focus area is a group of courses comprising of 12 or more credit hours (minimum 6 hours upper division at the 300 or 400 level) which form a coherent theme. For example, all courses may share a common subject prefix. Students work with an academic success specialist to identify their secondary focus area. EGR 330 offered in fall only
		EGR 301: Fall Concentration Project	3		
		EGR 330: Design of Electrical Systems (Electrical focus) or Lower Division Humanities, Fine Arts and Design (HU)	3		
		EGR 356: Robotics I	3		
		Secondary Focus Area	3		
		Term hours subtotal:	16		
Term 6	76 - 90 Credit Hours		Hours	Minimum Grade	Notes

EGR 302: Spring Concentration Project	3
EGR 343: Mechanics of Solid Materials (Mechanical focus) or Upper Division Humanities, Fine Arts and Design (HU)	3
HST 318: History of Engineering (L or SB) & G)	3
MAT 343: Applied Linear Algebra	3
Secondary Focus Area	3
Term hours subtotal:	15

- A secondary focus area is a group of courses comprising of 12 or more credit hours (minimum 6 hours upper division at the 300 or 400 level) which form a coherent theme. For example, all courses may share a common subject prefix. Students work with an academic success specialist to identify their secondary focus area.
- EGR 343 offered in spring only

Term 7 91 - 105 Credit Hours

	Hours
EGR 401: Engineering Capstone Project I (L)	3
EGR 346: Engineering Design (mechanical focus) or EGR 334: Analog-Digital Interface (electrical focus)	3
PHY 321: Vector Mechanics and Vibration OR PHY 331: Principles of Modern Electromagnetism OR ABS 485: GIS in Natural Resources	3
Upper Division Secondary Focus Area	3
Social and Behavioral Sciences (SB) AND Cultural Diversity in the U.S. (C)	3
Term hours subtotal:	15

Minimum Grade

Notes

- A secondary focus area is a group of courses comprising of 12 or more credit hours (minimum 6 hours upper division at the 300 or 400 level) which form a coherent theme. For example, all courses may share a common subject prefix. Students work with an academic success specialist to identify their secondary focus area.

Term 8 106 - 120 Credit Hours

	Hours
EGR 402: Engineering Capstone Project II	3
EGR 433: Transforms and Systems Modeling	3
EGR 456: Robotics II	3
Upper Division Secondary Focus Area	3
Upper Division Social and Behavioral Sciences (SB) OR Upper Division Humanities, Fine Arts and Design (HU)	3
Term hours subtotal:	15

Minimum Grade

Notes

- A secondary focus area is a group of courses comprising of 12 or more credit hours (minimum 6 hours upper division at the 300 or 400 level) which form a coherent theme. For example, all courses may share a common subject prefix. Students work with an academic success specialist to identify their secondary focus area.

Robotics - Electrical

- EGR 330: Design of Electrical Systems
- EGR 334: Analog-Digital Interface

Robotics - Mechanical

- EGR 343: Mechanics of Solid Materials
- EGR 346: Engineering Design

Total Hours: 120
Upper Division Hours: 45 minimum
Major GPA: 2.00 minimum
Cumulative GPA: 2.50 minimum
Total hrs at ASU: 30 minimum
Hrs Resident Credit for Academic Recognition: 56 minimum
Total Community College Hrs: 64 maximum

General University Requirements Legend

- General Studies Core Requirements:
- Literacy and Critical Inquiry (L)
 - Mathematical Studies (MA)
 - Computer/Statistics/Quantitative Applications (CS)
 - Humanities, Fine Arts and Design (HU)
 - Social and Behavioral Sciences (SB)
 - Natural Science - Quantitative (SQ)
 - Natural Science - General (SG)

General Studies Awareness Requirements:

- Cultural Diversity in the U.S. (C)
 - Global Awareness (G)
 - Historical Awareness (H)
- First-Year Composition

General Studies designations listed on the major map are current for the 2013 - 2014 academic year.



To: Elizabeth D. Phillips
Executive Vice President and University Provost

From: Mitzi Montoya
Vice Provost, Dean, and Professor
College of Technology and Innovation

Date: September 23, 2012

Re: Establishment of Concentration in Robotics within the B.S. in Engineering

Please accept this memo of support for the establishment of the proposed concentration in Robotics within the B.S. in Engineering. The attached proposal has been developed by the faculty of Engineering, has been reviewed and approved through the established process within the college and has full support of the faculty and the College of Technology and Innovation dean's office.

The department of Engineering has sufficient resources to support the new concentration in Robotics without impacting the offering of core courses within the unit.


If you have any questions or concerns, please do not hesitate to contact me.

CC: Scott Danielson, Associate Dean of Academic Programs, College of Technology and Innovation
Ann McKenna, Chair and Associate Professor, College of Technology and Innovation

College of Technology and Innovation
Office of the Vice Provost and Dean
7231 E. Sonoran Arroyo Mall
Santan Hall, Suite 330
Mesa, AZ 85212
(480) 727-5232 Fax: (480) 727-1089

Date: September 25, 2012

To: Mitzi Montoya
Vice Provost, Dean, and Professor
College of Technology and Innovation

From: Ann McKenna 
Chair and Associate Professor
Engineering Department
College of Technology and Innovation

Re: Establishment of Concentration in Robotics within the B.S. in Engineering

Please accept this memo of support for the establishment of the proposed concentration in Robotics within the B.S. in Engineering. The attached proposal has been developed by the faculty of Engineering, has been reviewed and approved through the established process within the department and the college and has full support of the faculty of the College of Technology and Innovation.

The department of Engineering has sufficient resources to support the new concentration in Robotics without impacting the offering of core courses within the unit.

From: James Collofello
Sent: Wednesday, September 26, 2012 9:28 AM
To: Scott Danielson
Subject: RE: BSE in Engineering Concentrations Proposal Impact Statements

Scott,

The engineering school does not have any concerns with the new proposed concentrations.

jim

James S. Collofello
Associate Dean of Academic and Student Affairs
Professor of Computer Science and Engineering
School of Computing Informatics and Decision Systems Engineering
Ira A. Fulton Schools of Engineering
Arizona State University

From: Scott Danielson
Sent: Tuesday, September 25, 2012 4:30 PM
To: James Collofello
Subject: BSE in Engineering Concentrations Proposal Impact Statements

Jim,

As per our conversations, I am asking for your comment on the attached proposals for three different concentrations to be offered by the BSE in Engineering program in the College of Technology and Innovation at the Polytechnic campus. It is my understanding that our Deans reached agreement on our offering these concentrations in previous conversations.

Thank you.

Scott Danielson, Ph.D., P.E.
Associate Dean for Academic Programs
College of Technology and Innovation
Arizona State University